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# Chapter 2 - Core Elements for New Development and Redevelopment

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## 2.1 Introduction

This chapter identifies and defines the eight Core Elements of stormwater management. These Core Elements are applicable to new development and redevelopment projects in eastern Washington. Not all Core Elements apply to every project, and depending on the type and size of a project, different combinations of the eight Core Elements will apply. See Chapter 1.3 of this Manual for the regulatory framework and conditions under which the Manual may be required for various projects; also see Chapter 1.1.3 for a description of using a demonstrative approach to protecting water quality in lieu of following the Manual. Best Management Practices (BMPs) for implementing the Core Elements are described in Chapters 5 through 8 of this Manual. Specific project exemptions are listed in sections 2.1.3 and 2.1.4 below. See the Glossary for definitions of some of the words and phrases used in this section.

**The Core Elements are:**

- 1. Preparation of a Stormwater Site Plan**
- 2. Construction Stormwater Pollution Prevention**
- 3. Source Control of Pollution**
- 4. Preservation of Natural Drainage Systems**
- 5. Runoff Treatment**
- 6. Flow Control**
- 7. Operation and Maintenance**
- 8. Local Requirements**

The purpose and applicability of each of these Core Elements is summarized in Table 2.1.1 and described in detail in section 2.2. Project proponents need to be familiar with the contents of this Chapter in order to determine which Core Elements apply to a given project.

Both **Guidelines** and **Supplemental Guidelines** are provided under the Redevelopment definition and under the Core Elements. The guidelines must be followed in order for a project to comply with the stormwater management provisions set forth in this Manual. Supplemental guidelines are optional and are included for consideration under special circumstances; these guidelines may be required in certain jurisdictions.

The sections on **Responsibilities of Local Jurisdictions** are provided as guidance for jurisdictions that are planning programmatic activities to manage stormwater to protect surface and groundwater quality.

**Table 2.1.1 – Purpose and applicability of the Core Elements**

<b>Core Element</b>		<b>Purpose</b>	<b>Applicability</b>
<b>1</b>	Preparation of a Stormwater Site Plan	To integrate stormwater management into project planning and design	Applicable to all sites; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>2</b>	Construction Stormwater Pollution Prevention	To control erosion and prevent sediment and other pollutants from leaving the site	Applicable to all sites; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>3</b>	Source Control of Pollution	To prevent stormwater from coming into contact with potential pollutants	Applicable to all sites; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>4</b>	Preservation of Natural Drainage Systems	To maximize the extent to which stormwater discharge patterns, rates, and outfall locations remain the same after a development project	Applicable to all sites; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>5</b>	Runoff Treatment	To protect water quality in the receiving water by reducing the loads and concentrations of pollutant in stormwater using biological, physical and chemical removal methods	Applicable only to sites that are determined to have sufficient pollutant-generating potential; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>6</b>	Flow Control	To protect stream morphology and habitat by mitigating the impacts of increased storm runoff volumes and flow rates to streams	Applicable only to sites that discharge to non-exempt surface water bodies; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>7</b>	Operation and Maintenance	To prevent failure of stormwater treatment facilities or improper discharges due to inadequate maintenance or improper operation	Applicable to all sites with runoff treatment or flow control facilities; required if stipulated as part of a rule, ordinance, or permit issued by local, state or federal government
<b>8</b>	Local Requirements	To provide for additional conditions or measures needed to protect local water bodies or for other reasons	Applicable to and required for all sites where such measures have been established by local ordinance or rule

### **2.1.1 New Development**

New development is the conversion of previously undeveloped or pervious surfaces to impervious surfaces and managed landscape areas not specifically exempt below in section 2.1.3 or 2.1.4. See Chapter 1 for the regulatory framework under which a project may be directed to use this Manual or an approved equivalent.

All new development projects must comply with:

- Core Element #1 Preparation of a Stormwater Site Plan,
- Core Element #2 Construction Stormwater Pollution Prevention,
- Core Element #3 Source Control of Pollution,
- Core Element #4 Preservation of Natural Drainage Systems, and
- Core Element #8 Local Requirements.

When the thresholds for Core Element #5 Runoff Treatment are met (see section 2.2.5), the following Core Elements also apply:

- Core Element #5 Runoff Treatment, and
- Core Element #7 Operation and Maintenance.

When the thresholds for Core Element #6 Flow Control are met (see section 2.2.6), the following Core Elements also apply:

- Core Element #6 Flow Control, and
- Core Element #7 Operation and Maintenance.

Projects that add new lanes on an existing roadway or otherwise expand the pavement edge are included in the definition of new development because they create new impervious surfaces. These projects are subject to the thresholds and requirements set forth in this Manual or adopted by a local jurisdiction or agency.

### **2.1.2 Redevelopment**

Redevelopment is defined as the replacement or improvement of impervious surfaces on a developed site. Impervious surface replacements defined as exempt activities in section 2.1.3 and other projects identified in section 2.1.4 have reduced requirements. The project proponent must identify what Core Elements apply to all of the new and replaced impervious surfaces created by the project. All new impervious surfaces added during a redevelopment project are subject to the Core Elements identified in 2.1.1 above. The following sections apply to the impervious surfaces altered by a redevelopment project.

#### **Objective**

The long-term goal of the redevelopment standard is to reduce stormwater pollution from existing developed sites, especially when a water quality problem has been identified or the site is being improved to accommodate a use with a greater potential to contribute pollution to the receiving waters. More stringent redevelopment thresholds and requirements may

be identified through a water cleanup plan such as a Total Maximum Daily Load (TMDL) study and allocation or another basin planning process.

To encourage redevelopment projects, replaced or improved surfaces are not required to meet new stormwater standards unless the use or area thresholds identified in the Guidelines section below are met or exceeded for the redevelopment project scope. As long as the replaced or improved surfaces have similar pollution-generating potential, the amount of pollutants discharged should not be significantly different. However, following a rationale consistent with other utility standards, some redevelopment projects are required to meet current stormwater standards. (When a structure or a property undergoes significant remodeling, local jurisdictions may require the site to meet new building code requirements such as onsite sewage disposal systems, wheelchair access provisions and/or fire systems.) Upgrading stormwater infrastructure is generally more economical when included as part of a redevelopment project than when undertaken as a separate effort.

See Chapter 1 for the regulatory framework under which a redevelopment project may be directed to use this Manual or an approved equivalent.

Impervious surfaces created by development are classified as either non-pollutant-generating (NPGIS) or pollutant-generating (PGIS) as described in detail in section 2.2.5 Core Element #5 Definitions. The majority of the impervious surfaces in a watershed are either NPGIS or PGIS with low pollutant loadings. The PGIS with low pollutant loadings may contribute a substantial portion of the cumulative stormwater pollutant load received by a water body. But in the absence of a documented water quality problem, the standard for applying runoff treatment to redevelopment projects in eastern Washington applies primarily to sites where pollutant concentrations in runoff are expected to exceed water quality standards. Therefore, replaced impervious surfaces with low pollutant loadings are not generally subject to runoff treatment requirements in eastern Washington; but treatment is required for redeveloped surfaces (PGIS) with medium or high pollutant loadings (see guidelines below).

### **Guidelines**

When the following conditions are met, the identified Core Elements (detailed in sections 2.2.1 through 2.2.8) apply to replaced impervious surfaces. For projects that are implemented in incremental stages, the redevelopment threshold applies to the total amount of impervious surfaces replaced at full build-out; the new development thresholds apply to the total amount of impervious surfaces added at full build-out. To maintain their integrity and function, stormwater treatment facilities must be sized for the entire flow that is directed to them.

Where replacement of 5,000 square feet or more of existing PGIS occurs:

- **Core Elements 1, 2, 3, 4, 7, and 8** shall apply to the portion of the site where any impervious surfaces are replaced (includes both PGIS and NPGIS areas).
- **Core Elements 2 and 3** shall be applied to the entire site that is affected by the project activities.
- In addition to the above requirements, **Core Element 5** shall be applied to the replaced PGIS area at the site if any of the following conditions exist. Unless otherwise noted, the project is only required to provide basic runoff treatment to remove solids.
  - The project takes place at an industrial site as defined by EPA (40 CFR 122.26(b)(14)) with outdoor handling, processing, storage, or transfer of solid raw materials or finished products. Additional treatment to remove metals is required for sites that are subject to benchmark monitoring requirements for metals.
  - The project takes place at a commercial site with outdoor storage or transfer of solid raw materials or treated wood products.
  - A need for additional stormwater control measures has been identified through a TMDL or other water cleanup plan or other planning process. (Local jurisdictions are cautioned that they may have difficulty meeting TMDL waste load allocations if they wait until corrective actions are required by a TMDL. See Supplemental Guidelines below.)
  - The project takes place at a “high-use site” as defined in section 2.2.5 Core Element #5 Definitions. Additional treatment must be provided to remove oil at high-use sites.
  - The project takes place in an area subject to vehicular traffic under any of the following conditions. Preservation/maintenance projects and some improvement and safety enhancement projects that do not increase motorized vehicular capacities are exempt from the Core Elements as defined in section 2.1.3 or partially exempt as defined in section 2.1.4. *See the definition of average daily traffic and trip ends in Core Element 5 (Chapter 2.2.5).*
    - a) The project improves a soft shoulder to a curb and gutter roadway with an average daily traffic volume of 7,500 or more vehicles. (See section 2.1.4 for partial exemptions for other safety improvement projects.)
    - b) The project replaces and(or) improves the surface of a parking area where the projected number of trip ends exceeds 40 per 1,000 square feet of building area or 100 total trip ends per day. Additional treatment to remove both oil and metals is required

if the projected number of trip ends exceeds 100 per 1,000 square feet of building area or 300 total trip ends per day.

- c) The project replaces and(or) improves the surface of an urban road where the projected average daily traffic volume is 7,500 or more vehicles per day. Additional treatment to remove both oil and metals is required if the average daily traffic volume is greater than 30,000 vehicles per day.
  - d) The project replaces and(or) improves the surface of a rural road, freeway, or highway with limited access control where the projected average daily traffic volume is 15,000 or more vehicles per day. Additional treatment to remove both oil and metals is required if the average daily traffic volume is greater than 30,000 vehicles per day. (A *freeway* is defined as a multilane, arterial highway with full access control.)
  - e) The project affects the area within 500 feet of a controlled intersection on a limited access control highway with projected average daily traffic volume of 7,500 or more vehicles per day. Only this area must be treated.
- In addition to the above requirements, **Core Element 6** shall be applied to all of the replaced impervious surfaces at the site (includes both PGIS and NPGIS areas) if required by the state, federal, or local jurisdiction based on flooding studies or habitat assessments.

#### Local Retrofit Programs:

If the local jurisdiction has an equivalent or more stringent retrofit program in place, then those requirements may replace these conditions. The program must meet the intent of the requirements above and may need to be approved by Ecology. The requirements must be at least as stringent as the thresholds above, meaning that the number and types of projects regulated by the local requirements is the same or greater. Local jurisdictions can select from various bases for identifying projects that must retrofit the replaced impervious surfaces on the project site. Those can include:

- Exceeding 50% of the assessed value of the existing improvements;
- Exceeding 50% of the replacement value of the existing site;
- Exceeding a certain dollar value of improvements;
- Exceeding a certain ratio of the new impervious surfaces to the total of replaced plus new impervious surfaces; or exceeding an established threshold of added or replaced surfaces (e.g., the project adds 10,000 square feet or more of new impervious surfaces or replaces 20,000 square feet of impervious surfaces);

- There is a change in the use of the site to a use with greater potential to contaminate stormwater.

The local jurisdiction may allow the Core Elements to be met for an area with equivalent flow and pollution characteristics within the same site. For public road projects, the equivalent area does not have to be within the project limits, but must drain to the same water body segment and be located upstream from a confluence with another water body downstream from the project site.

A local jurisdiction may provide exemptions or institute a maximum retrofitting cost provision for redevelopment projects from compliance with Core Elements for treatment, flow control, and wetlands protection as applied to the replaced impervious surfaces if the local jurisdiction has adopted a plan and a schedule that fulfills those requirements in regional facilities.

### **Supplemental Guidelines**

Local jurisdictions may institute a stop-loss provision on the application of stormwater requirements to replaced impervious surfaces. A stop-loss provision is an upper limit on the extent to which a requirement is applied. For instance, there could be a maximum percentage of the estimated total project costs that are dedicated to meeting stormwater requirements. A project would not have to incur additional stormwater costs above that maximum though the standard redevelopment requirements will not be fully achieved. Allowances may also be made for sites that would, by imposing the treatment requirement, become non-conforming to other requirements that apply to the site. Every effort should still be made to find creative ways to meet the intent of the Core Elements. The allowance for a stop-loss provision pertains to the extent that treatment, flow control and wetlands protection requirements are imposed on replaced impervious surfaces. It does not apply to meeting stormwater requirements for new impervious surfaces.

For redevelopment projects that discharge into the municipal storm sewer system, local jurisdictions may also establish criteria for allowing payment of a fee-in-lieu of constructing water quality or flow control facilities. At a minimum, the fee should be the equivalent of an engineering estimate of the cost of meeting all applicable stormwater requirements for the project. The local jurisdiction should use such funds for the implementation of stormwater control projects that would have similar benefits to the same receiving water as if the project had constructed its required improvements. The stormwater control project could be a regional facility that includes service to the redevelopment site, or a facility serving other public or private lands tributary to the same receiving water. Expenditure of such funds is subject to other state statutory requirements.

Ecology cautions local jurisdictions about the potential long-term consequences of allowing a fee-in-lieu of stormwater facilities. Sites that

are allowed to pay a fee continue without stormwater controls. If it is determined, through future basin planning for instance, that controls on such sites are necessary to achieve water quality goals or legal requirements, the public may bear the costs for providing those controls.

Local jurisdictions may require treatment facilities for redevelopment projects that discharge to a receiving water that has a documented water quality problem. This provision should focus on water quality problems for metals, oil and grease, bacteria, sediment, suspended solids, phosphorus, or any other water quality problem to which stormwater is considered a contributor.

Sites with 100% existing building coverage that are currently connected to a municipally-owned storm sewer or combined sewer must be evaluated on a case-by-case basis to continue to be connected without treatment; additional local requirements such as flow restrictors may also be required.

### **Responsibilities of Local Jurisdictions**

As part of the routine project approval and permitting process, local jurisdictions should review redevelopment project plans for intent and completeness in meeting the redevelopment guidelines. Where space is limited, staff may assist project proponents in modifying BMPs and(or) finding creative ways to meet the intent of the Core Elements. Local jurisdictions should begin planning regional treatment facilities in areas where meeting the on-site treatment objectives for individual redevelopment projects will be challenging.

## **2.1.3 Exemptions**

The following practices are exempted from the Core Elements:

### **Forest Practices**

Forest practices regulated under Title 222 WAC are exempt from the provisions of the Core Elements. Conversions of forest lands to other uses are not exempt.

### **Commercial Agriculture**

Commercial agriculture practices involving working the land for production are generally exempt. However, the construction of impervious surfaces is not exempt.

### **Road and Parking Area Preservation/Maintenance**

The following road and parking area maintenance practices are exempt (see also section 2.1.4 Partial Exemptions below):

- Pothole and square cut patching;
- Crack sealing;
- Resurfacing with in-kind material without expanding the road prism;

- Overlaying existing asphalt or concrete pavement with bituminous surface treatment (BST or “chip seal”), asphalt or concrete without expanding the area of coverage;
- Shoulder grading;
- Reshaping/regrading drainage systems; and
- Vegetation maintenance.

#### 2.1.4 Partial Exemptions

The following practices are generally exempted from all of the Core Elements except for Core Element #1 Preparation of a Stormwater Site Plan and Core Element #2 Construction Stormwater Pollution Prevention:

##### **Underground Utility Projects**

Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics are subject only to Core Element #1 Preparation of a Stormwater Site Plan and Core Element #2 Construction Stormwater Pollution Prevention.

##### **Road and Parking Area Preservation/Maintenance**

A preservation or maintenance project is defined as preserving/protecting infrastructure by rehabilitating or replacing existing structures to maintain operational and structural integrity, and for the safe and efficient operation of the facility. Maintenance projects do not increase the traffic capacity of a roadway or parking area. The following practices are subject only to Core Element #1 Preparation of a Stormwater Site Plan and Core Element #2 Construction Stormwater Pollution Prevention:

- Removing and replacing a concrete or asphalt roadway to base course or subgrade or lower without expanding or improving the impervious surfaces.
- Repairing the roadway base or subgrade.
- Overlaying existing gravel with bituminous surface treatment (BST or “chip seal”) or asphalt or concrete without expanding the area of coverage, or overlaying BST with asphalt, without expanding the area of coverage. For this type of project, partial exemption applies **only** under the following conditions:
  - For roads, these practices are exempt from additional Core Elements **only** if the traffic surface will be subject to an average daily traffic volume of less than 7,500 on an urban road or an average daily traffic volume of less than 15,000 vehicles on a rural road, freeway, or limited access control highway. If these thresholds are exceeded, refer to the Redevelopment Guidelines in section 2.1.2 to determine which Core Elements apply.
  - For parking areas, these practices are exempt from additional Core Elements **only** if the traffic surface will be subject to less than 40 trip ends per 1,000 square feet of building area or 100 total trip

ends. If these thresholds are exceeded, refer to the Redevelopment Guidelines in section 2.1.2 to determine which Core Elements apply.

### **Safety Improvement Projects**

Projects to improve motorized and(or) non-motorized user safety that do not enhance the traffic capacity of a roadway are subject only to Core Element #1 Preparation of a Stormwater Site Plan and Core Element #2 Construction Stormwater Pollution Prevention except as specified under sub-item (a) under conditions for applying Core Element #5 Runoff Treatment in section 2.1.2 Redevelopment Guidelines. Certain safety improvement projects such as sidewalks, bike lanes, bus pullouts and other transit improvements must be evaluated on a case-by-case basis to determine whether additional Core Elements apply. A safety project that enhances the traffic carrying capacity of a roadway is not exempt from other Core Elements.

## **2.1.5 Local Exceptions/Variations**

### **Guidelines**

Exceptions to the Core Elements may be granted prior to permit approval and construction. The local jurisdiction may grant an exception following an application for an exception with legal public notice per the local jurisdiction's guidance and requirements for exceptions and variances. The administrator's decision should include a written finding of fact that documents the following:

- There are special physical circumstances or conditions affecting the property such that would prohibit the strict application of these provisions; and
- Every effort has been made to find alternative ways to meet the objectives of the Core Elements; and
- The granting of the exception or variance will not be detrimental to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the Core Elements.

If the local jurisdiction chooses to allow jurisdiction-wide exceptions or variances to the requirements of the Manual, those exceptions must be approved by Ecology or other agency exercising its permitting authority. Project-specific design deviations based on site-specific conditions generally do not require approval of the permitting authority and are left to the discretion of the local jurisdiction.

### **Supplemental Guidelines**

The adjustment and exception provisions are an important element of the plan review and enforcement programs. They are intended to maintain a necessary flexible working relationship between local officials and applicants. Local jurisdictions should consider these requests judiciously, keeping in mind both the need of the applicant to maximize cost-effectiveness and the need to protect off-site properties and resources from damage.

## **2.2 Core Elements**

This section describes the eight Core Elements for stormwater management at development and redevelopment sites in eastern Washington. Chapters 5 through 8 of this Manual contain Best Management Practices (BMPs) to choose from in implementing these Core Elements for each project.

The requirements of these Core Elements do not excuse any discharge from the obligation to apply whatever technology is necessary to comply with state water quality standards, Chapter 173-201A WAC, or state groundwater standards, Chapter 173-200 WAC. Additional treatment requirements to meet those standards may be required by federal, state, or local jurisdictions.

This Manual is intended to assist projects discharging to surface water and projects with discharges to groundwater via Underground Injection Control (UIC) Facilities in complying with regulatory requirements to protect water quality. Nearly all of this section applies to projects with discharges to surface water, and most of it also applies to projects with discharges to groundwater. Each Core Element includes a section identifying the applicability of that Core Element to projects disposing of stormwater runoff using UIC facilities in order to clarify how the Core Element might be applied differently for projects discharging to surface and groundwaters. Some Core Elements also include a section on applicability to wetlands where special considerations are needed for those discharges.

### **2.2.1 Core Element #1 Preparation of a Stormwater Site Plan**

#### **Objective**

Stormwater management is most successful when integrated into project planning and design. Projects are expected to demonstrate compliance with the applicable Core Elements through preparation of a Stormwater Site Plan.

### **Guidelines**

All projects that are subject to Core Elements #2, #3, #4, #5, #6 or #8 are expected to complete a Stormwater Site Plan (SSP). When required, Stormwater Site Plans shall be prepared in accordance with Chapter 3 of this Manual.

Projects proposed by departments and agencies within the local jurisdiction must comply with this requirement. The local jurisdiction shall determine the process for ensuring proper project review, inspection, and compliance by its own departments and agencies.

#### ***Applicability to UIC Facilities***

This Core Element applies to projects with drywells and other UIC rule-authorized subsurface infiltration systems when Core Elements #2, #3, #4, #5, #6 or #8 are required.

### **Supplemental Guidelines**

A simplified SSP may be developed by the local jurisdiction and made available for use by proponents of small projects.

### **Responsibilities of Local Jurisdictions**

As part of the routine project approval and permitting process, local jurisdictions should review SSPs for completeness and adequacy in fulfilling the objectives of the Core Elements. Plan review staff should be trained in the application of this Manual or the approved local equivalent.

## **2.2.2 Core Element #2 Construction Stormwater Pollution Prevention**

### **Objective**

Runoff from project sites during the construction phase can contribute quantities of sediment and other contaminants sufficient to result in water quality violations. Sediment-laden runoff can enter newly constructed drywells, reducing their infiltration capacity and lifetime of operation or increasing maintenance costs.

Controlling erosion and preventing sediment and other pollutants from leaving the project site during the construction phase is achievable through implementation of selected Best Management Practices (BMPs) that are appropriate both to the site and to the season during which construction activities take place. The Construction Stormwater Pollution Prevention Plan (SWPPP) identifies project-specific guidance for preventing pollution resulting from erosion and sediment runoff during the construction phase. A well-written SWPPP provides guidance that is neither over- nor under-protective for the project site. The Construction SWPPP should include seasonally-appropriate guidance and anticipate adjustments that may be necessary in the event of delays in the construction schedule.

## **Guidelines**

When this Core Element is required, Core Element #1 Preparation of a Stormwater Site Plan is also required.

### ***Construction SWPPP Elements***

All projects are responsible for preventing erosion and discharge of sediment into surface waters and must consider each of the twelve elements of pollution prevention in order to determine which controls are appropriate for the project site. Chapter 7 of this Manual identifies and describes appropriate Best Management Practices (BMPs) for each of these elements.

The twelve Construction SWPPP elements are listed below. See Chapter 7 for a description of each of these elements and suggested BMPs for each element.

1. Mark Clearing Limits
2. Establish Construction Access
3. Control Flow Rates
4. Install Sediment Controls
5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels and Outlets
9. Control Pollutants
10. Control De-Watering
11. Maintain BMPs
12. Manage the Project

If a Construction SWPPP is found to be inadequate with respect to applicable erosion and sediment control requirements (i.e., sediment-laden water is leaving the site), then the local jurisdiction shall require that other BMPs be implemented as appropriate.

### ***Maintaining an Updated SWPPP***

The Construction SWPPP must be maintained on the construction site for reference and use by project personnel. The SWPPP, including the site map, must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to surface or ground water that has not been previously addressed in the SWPPP. The SWPPP must be amended if during inspections or investigations by site staff, or by the jurisdiction, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site. Based on the results of an inspection, the SWPPP must be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP must be completed within seven calendar days following the inspection. Implementation of these additional or modified BMPs must be

accomplished before the next storm event whenever practicable. Where implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.

***Applicability to  
UIC Facilities***

This Core Element is required for all projects with drywells and other UIC rule-authorized subsurface infiltration systems to protect and ensure the proper long-term function of the UIC facility. Preventing sediment from entering the facility may be all that is necessary to achieve this objective. Source control during construction (SWPPP element #9) is also required to prevent contamination of groundwater by fuel or other potential pollutants.

**Supplemental Guidelines**

The local jurisdiction may allow development of generic Construction SWPPPs that apply to commonly conducted projects such as public road activities.

**Responsibilities of Local Jurisdictions**

Local jurisdictions should review SWPPPs for completeness and adequacy in meeting the objectives of this Core Element. Staff inspecting projects during construction should be trained in assessing the application of erosion and sediment control BMPs; if problems are identified, staff should review the SWPPPs on-site and discuss appropriate modifications with operators.

**2.2.3 Core Element #3  
Source Control of Pollution**

**Objective**

The intent of Source Control Best Management Practices (BMPs) is to prevent pollutants from coming into contact with stormwater. Source control BMPs are a cost-effective means of reducing pollutant loading and concentrations in stormwater and should be a first consideration in all projects.

**Guidelines**

Following construction, projects shall apply all known, available and reasonable source control BMPs. Source control BMPs shall be selected, designed, and maintained according to this Manual.

Considering opportunities for structural separation of surfaces exposed to pollutants and other source control alternatives during the project design stage may result in eliminating or reducing the size of facilities required under Core Element #5 Runoff Treatment.

***Applicability to  
Wetlands***

This Core Element is required for all projects with discharges to wetlands. Operational and source control BMPs may not be sufficient to protect

wetlands from salts and other chemical anti-icers and deicers that can accumulate and impact the biological functions of a wetland. Separation and routing of runoff to an alternate discharge location may be necessary to protect the wetland from runoff from road and other surfaces subject to such chemical use.

***Applicability to  
UIC Facilities***

This Core Element is required for all projects with discharges to drywells and other UIC rule-authorized subsurface infiltration systems.

**Supplemental Guidelines**

A basin plan adopted and implemented by a local jurisdiction or a Total Maximum Daily Load (TMDL, also known as a Water Cleanup Plan) may be used to develop more stringent source control requirements that are tailored to a specific basin.

Source Control BMPs include Operational BMPs and Structural Source Control BMPs. See Chapter 8 for design details of these BMPs. For construction sites, see Chapter 7.

**Responsibilities of Local Jurisdictions**

During plan review, local jurisdictions should evaluate whether selected source BMPs will meet the objectives of this Core Element. Staff conducting inspections of commercial and industrial facilities should be trained in assessing the proper selection and implementation of source control BMPs; staff should review pollution prevention and spill control plans and discuss appropriate modifications with operators if a problem is identified.

## **2.2.4 Core Element #4 Preservation of Natural Drainage Systems**

**Objective**

Natural drainage patterns should be maintained and discharges from the project site should occur at the natural location to the maximum extent practicable. Preservation of natural drainage systems provides multiple benefits for stormwater management. Creating new drainage patterns results in more site disturbance and more potential for erosion and sedimentation during and after construction. Creating new discharge points can create significant stream channel erosion problems as the receiving water body typically must adjust to the new flows. Diversions can cause greater impacts than would otherwise occur by discharging runoff at the natural location. Wetlands can be severely degraded by discharges from urban development due to pollutants in the runoff and also due to disruption of the natural hydrology (especially changes in water levels and the duration of inundations) of the wetland system.

## **Guidelines**

To the maximum extent practicable, stormwater should be discharged in the same manner, at the same location, and at the same flow rate and volume as under the conditions that existed prior to development. Because some change in natural flow patterns is unavoidable following development, the preferred options for discharge of excess stormwater are, in order of preference to maintain natural drainage systems:

1. Maintain dispersed sheet flow to match natural conditions.
2. Infiltrate on-site.
3. Infiltrate off-site.
4. Discharge to existing ditch networks, canals, or other dispersal methods that allow for potential groundwater recharge.
5. Discharge to wetlands, if allowed.
6. Discharge to existing private or municipally-owned stormwater systems, if allowed.
7. Evaporate on-site or off-site.
8. Create a new outfall for discharge to surface waters.

This Core Element includes stormwater infiltration if that is the natural discharge method for the site. The designer shall investigate whether shallow groundwater, a sensitive aquifer, or other concerns will affect design choices for the project.

The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and down-gradient properties. This should be addressed as part of the off-site analysis described in Appendix 3A.

All outfalls must address energy dissipation as necessary. A project proponent who believes that energy dissipation should not be required for a new outfall must provide justification in the project's stormwater site plan or drainage study report.

Runoff treatment or flow control may be required prior to any discharge according to the requirements of Core Elements #5 or #6.

### ***Applicability to Wetlands***

Discharge of stormwater to existing jurisdictional wetlands, either directly or via a conveyance system, should be avoided unless the wetland receives surface runoff from the existing site. If possible, only stormwater from landscape and roof areas should be discharged to wetlands. The discharge must comply with all applicable Core Elements to ensure that wetlands receive the same level of protection as any other waters of the state. See Core Elements #5 Runoff Treatment and #6 Flow Control for guidelines for evaluating whether an existing wetland may be used as a runoff treatment or flow control facility.

### ***Applicability to UIC Facilities***

This Core Element applies to all projects with discharges to drywells and other UIC rule-authorized subsurface infiltration systems.

### **Supplemental Guidelines**

For projects with no identified discharge point, local jurisdictions may wish to adopt guidance for disposal of water collected for runoff treatment per the requirements of Core Element #5 Runoff Treatment. The guidance is intended to protect downstream properties from flooding as a result of post-construction concentrated runoff.

Where no conveyance system exists at the adjacent down-gradient property line, and the discharge was previously un-concentrated flow or significantly lower concentrated flow, then measures must be taken to prevent down-gradient impacts. Drainage easements from downstream property owners may be needed and should be obtained prior to approval of engineering plans.

Designs for outfall systems to protect against adverse impacts from concentrated runoff are included in Chapter 5.

### **Responsibilities of Local Jurisdictions**

During plan review, local jurisdictions should consider whether the construction and stormwater management approaches meet the objectives of this Core Element. Local jurisdictions may also wish to provide project proponents with resources about appropriate low impact development (LID) techniques that can assist in meeting the objectives of this Core Element. For additional information about LID approaches and links to demonstration projects and research activities, see websites and links provided by the U.S. Environmental Protection Agency, Puget Sound Water Quality Action Team, or Ecology.

## **2.2.5 Core Element #5 Runoff Treatment**

### **Objective**

The purpose of runoff treatment is to reduce pollutant loads and concentrations in stormwater runoff using physical, biological, and chemical removal mechanisms to protect water quality so that beneficial uses of receiving waters are maintained and where applicable, restored. The most effective basic treatment BMPs remove about 80% of the total suspended solids contained in the runoff treated and a much smaller percentage of the dissolved pollutants. An analysis of the proposed land use at the project site is used to determine the pollutants of concern and the appropriate treatment method(s) to apply at the site. In some cases, additional treatment to remove oil, metals, and(or) phosphorus from stormwater runoff may be required to protect water quality.

The goal of this Core Element is to treat approximately 90% of the annual runoff generated by the pollutant-generating surfaces at a project site. The total quantity of pollutants removed from the stormwater will vary greatly from site to site based on precipitation patterns, land use, effectiveness of

source control, and operation and maintenance of the treatment facilities. Proper operation and maintenance of runoff treatment BMPs may be more significant than the actual volume of runoff treated in protecting receiving waters over the long term.

When site conditions are appropriate, infiltration can potentially be the most effective BMP for runoff treatment. Given sufficient treatment capacity in the vadose zone below an Underground Injection Control (UIC) facility, such as a drywell, and the water table, no pre-treatment may be required for many of the pollutants of concern in stormwater. The criteria for determining whether pre-treatment is required for a given proposed land use and site location are explained in Chapter 5.6.

In some situations, full or partial dispersion may provide adequate treatment in addition to disposing of the excess runoff from a site. See the section on dispersion BMPs in Chapter 6. to determine whether one of these BMPs is a viable option for your project.

### **Definitions**

#### ***Non-Pollutant Generating Impervious Surfaces (NPGIS)***

NPGIS are considered to be insignificant or very low sources of pollutants in stormwater runoff. Roofs that are subject only to atmospheric deposition or normal heating, ventilation, and air conditioning vents are considered NPGIS. The following may also be considered NPGIS: paved bicycle pathways and pedestrian sidewalks that are separated from and not subject to drainage from roads for motor vehicles, fenced fire lanes, infrequently used maintenance access roads, and “in-slope” areas of roads. Sidewalks that are regularly treated with salt or other deicing chemicals are not considered NPGIS.

#### ***Pollutant Generating Impervious Surfaces (PGIS)***

PGIS are considered to be significant sources of pollutants in stormwater runoff. Such surfaces include those that are subject to vehicular use, industrial activities, or storage of erodible or leachable materials that receive direct rainfall or run-on or blow-in of rainfall. Metal roofs are considered to be PGIS unless coated with an inert, non-leachable material. Roofs that are subject to venting of manufacturing, commercial or other indoor pollutants are also considered PGIS. A surface, whether paved or not, shall be considered PGIS if it is regularly used by motor vehicles. The following are considered regularly-used surfaces: roads, unvegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, unfenced fire lanes, vehicular equipment storage yards, and airport runways.

#### ***Average Daily Traffic (ADT) and Trip Ends***

The expected number of vehicles using a roadway or parking area is represented by the projected average daily traffic volume considered in designing the roadway or by the projected trip end counts for the parking area associated with a proposed land use. ADT and trip end counts must be estimated using “Trip Generation” published by the Institute of Transportation Engineers or from a traffic study prepared by a

professional engineer or transportation specialist with expertise in traffic volume estimation. ADT and trip end counts shall be made for the design year or expected life of the project (the intent is for treatment facilities to be added in the soonest period of disruptive construction). For project sites with seasonal or varied use, evaluate the highest period of expected traffic impacts.

***Low ADT  
Roadways and  
Parking Areas***

Urban roads with ADT fewer than 7,500 vehicles per day; rural roads and freeways with ADT less than 15,000 vehicles per day; and parking areas with less than 40 trip ends per 1,000 SF of gross building area or fewer than 100 total trip ends per day are considered to be low-use traffic areas. Examples include most residential parking, and employee-only parking areas for small office parks or other commercial buildings.

***Moderate ADT  
Roadways and  
Parking Areas***

Urban roads with ADT between 7,500 and 30,000 vehicles per day; rural roads and freeways with ADT between 15,000 and 30,000 vehicles per day; and parking areas with between 40 and 100 trip ends per 1,000 SF of gross building area or between 100 and 300 total trip ends per day are considered to be moderate-use traffic areas. Examples include visitor parking for small to medium commercial buildings with a limited number of daily customers.

***High ADT  
Roadways and  
Parking Areas***

Any road with ADT greater than 30,000 vehicles per day; and parking areas with more than 100 trip ends per 1,000 SF of gross building area or greater than 300 total trip ends are considered to be high-use traffic areas. Examples include commercial buildings with a frequent turnover of customers and other visitors.

***Moderate-Use  
Sites***

Moderate-use sites include moderate ADT roadways and parking areas (see definition above); primary access points for high-density residential apartments; most intersections controlled by traffic signals; and transit center bus stops. These sites are expected to generate sufficient concentrations of metals that additional runoff treatment is needed to protect water quality in non-exempt surface waters.

***High-Use Sites***

High-use sites generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil and(or) other petroleum products. High-use sites are land uses where sufficient quantities of free oil are likely to be present such that they can be effectively removed with special treatment. A high-use site is any one of the following:

- A road intersection with expected ADT of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements; or
- A commercial or industrial site with an expected trip end count equal to or greater than 100 vehicles per 1,000 square feet of gross building area (best professional judgment should be used in comparing this criterion with the following criterion); or

- A customer or visitor parking lot with an expected trip end count equal to or greater than 300 vehicles (best professional judgment should be used in comparing this criterion with the preceding criterion); or
- Commercial on-street parking areas on streets with an expected total ADT count equal to or greater than 7,500; or
- Fueling stations and facilities; or
- A commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including locations where heating fuel is routinely delivered to end users (heating fuel handling and storage facilities are subject to this definition); or
- A commercial or industrial site subject to use, storage, or maintenance of a fleet of 25 or more diesel vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.); or
- Maintenance and repair facilities for vehicles, aircraft, construction equipment, railroad equipment or industrial machinery and equipment; or
- Outdoor areas where hydraulic equipment is stored; or
- Log storage and sorting yards and other sites subject to frequent use of forklifts and(or) other hydraulic equipment; or
- Railroad yards.

### **Exemptions**

Any of the exemptions below may be negated by requirements set forth in a Total Maximum Daily Load (TMDL) or other water cleanup plan.

#### ***Basic Treatment Exemptions***

Non-pollutant generating impervious surface (NPGIS) areas are exempt from basic treatment requirements *unless* the runoff from these areas is not separated from the runoff generated from pollutant generating impervious (PGIS) surface areas. All runoff treatment facilities must be sized for the entire flow that is directed to them. Projects that meet the requirements for dispersal and infiltration (see Chapter 6, particularly BMP T5.30) and do not meet the requirements for oil treatment are exempt from basic treatment requirements. Discharges to surface water from projects with a total PGIS area <5,000 square feet are exempt from basic treatment requirements *unless* those areas are subject to the storage or handling of hazardous substances, materials or wastes as defined in 49 CFR 171.8, RCW 70.105.010, and(or) RCW 70.136.020. Discharges to UIC facilities may be exempt from basic treatment requirements if the vadose zone matrix between the bottom of the facility and the water table provides adequate treatment capacity (see Chapter 5.6).

#### ***Metals Treatment Exemptions***

Discharges to non-fish-bearing streams are exempt from additional metals treatment requirements. Direct discharges to the main channels of the following rivers and direct discharges to the following lakes are exempt from metals treatment requirements: Banks Lake, Lake Chelan, Columbia

River, Grande Ronde River, Kettle River, Klickitat River, Methow River, Moses Lake, Potholes Reservoir, Naches River, Okanogan River, Pend Oreille River, Similkameen River, Snake River, Spokane River, Wenatchee River, and Yakima River. Subsurface discharges via rule-authorized Underground Injection Control (UIC) facilities (see Chapter 5.6) are also exempt from metals treatment requirements. Restricted residential and employee-only parking areas are exempt from metals treatment requirements unless subject to through traffic. Certain exemptions may exist for Category 4 wetlands (see “Use of Existing Wetlands to Provide Runoff Treatment” under Guidelines below.)

***Oil Treatment  
Exemptions***

No high-use sites or high ADT roads or parking areas are exempt from oil treatment requirements.

**Guidelines**

Treatment facilities shall be selected, designed, sized, constructed, operated and maintained in accordance with the guidance in Chapters 4 and 5 of this Manual. The flow chart at the beginning of Chapter 5 is intended to assist project proponents in selecting treatment BMPs.

All runoff treatment facilities must be sized for the applicable design storm(s) described in this section or according to alternative guidance as required by the local jurisdiction. In order to maintain the integrity and function of the treatment systems, stormwater runoff treatment facilities must be sized for the entire flow that is directed to them.

If it is possible for the project to meet treatment requirements by dispersal and infiltration (see Chapter 6.5, BMP F6.42), the runoff should not be collected and concentrated; otherwise flow control (Core Element #6) may be required.

When this Core Element is required, Core Element #7 Operation and Maintenance is also required.

***Applicability to  
UIC Facilities***

Discharge of untreated stormwater from PGIS to drywells and other UIC rule-authorized subsurface infiltration systems can be acceptable if the geologic matrix and depth to groundwater provide sufficient treatment capacity as determined per the criteria in Chapter 5.6 of this Manual. The narrative and tables in Chapter 5.6 describe the pollutant loading source area and vadose zone treatment capacity classifications that are used in making this determination. UIC facilities that discharge into geologic matrices without sufficient treatment capacity must be preceded by runoff treatment in accordance with this Core Element. Note that discharges to drywells that contain process water or other any other discharges besides stormwater will not be UIC rule-authorized and require individual permits. Discharges of stormwater from certain industrial and commercial sites to UIC facilities are prohibited (see the complete list in Chapter 5.6); discharges of process water to UIC facilities are also prohibited. Additional local requirements may apply for any discharge to a drywell or

other infiltration facility.

***Basic  
Treatment  
Requirements***

Runoff treatment is required for all projects creating 5,000 square feet or more of pollutant-generating impervious surfaces (PGIS) unless the discharge is to (1) a qualified UIC facility (see section above) or (2) satisfies the requirements for full dispersion (see Chapter 6, BMP F6.42) and is not a high-use site. Treatment is required for discharges to all surface waters of the state, including perennial and seasonal streams, lakes and wetlands where the PGIS threshold is met. Certain exemptions may exist for Category 4 wetlands (see later section on “Use of Existing Wetlands to Provide Runoff Treatment”). Runoff treatment is also required for discharges of stormwater to groundwater via UIC facilities where the vadose zone does not provide adequate treatment capacity (see Chapter 5.6). Project designers should also consider the possible impact of additional TSS loading from pervious areas at the project site on the long-term function of the treatment facility.

***Metals  
Treatment  
Requirements***

Metals treatment is required for moderate- and high-use sites (see Definitions section above) and sites that meet any of the following definitions and discharge to a non-exempt surface water:

- Industrial sites as defined by EPA (40 CFR 122.26(b)(14)) with benchmark monitoring requirements for metals; or industrial sites subject to handling, storage, production, or disposal of metallic products or other materials, particularly those containing arsenic, cadmium, chromium, copper, lead, mercury, nickel or zinc; or
- An urban road with expected ADT greater than 7,500; or a rural road or freeway with expected ADT greater than 15,000; or
- A commercial or industrial site with an expected trip end count equal to or greater than 40 vehicles per 1,000 square feet of gross building area; or a customer or visitor parking lot with equal to or greater than 100 trip ends; or on-street parking areas of municipal streets in commercial and industrial areas; or highway rest areas; or
- Runoff from metal roofs not coated with an inert, non-leachable material.

***Oil Control  
Requirements***

Oil control is required for all high-use sites (see definition above) and high ADT traffic areas. Some sites will require a spill control type of oil control facility (see Chapter 8) for source control separate from or in addition to this treatment requirement. High ADT traffic areas generate sufficient quantities of oil to threaten water quality, but the quantities of oil generated may be insufficient for many oil control BMPs to be effective; therefore these sites may employ different BMPs than are recommended for high-use sites (see Chapter 5). Projects proposing a high-use site must provide oil controls in addition to any other water quality treatment required per this Core Element.

High-use roadway intersections shall treat lanes where vehicles accumulate during the signal cycle, including left and right turn lanes and through lanes, from the beginning of the left turn pocket. If no left turn pocket exists, the treatable area shall begin at a distance equal to three car lengths from the stop line. If runoff from the intersection drains to more than two collection areas that do not combine within the intersection, treatment may be limited to any two of the collection areas where the cars stop.

High-use sites and high ADT roadways and parking areas must treat runoff from the high-use portion of the site using oil control treatment options in Chapter 5 of this Manual prior to discharge or infiltration. For high-use sites located within a larger project area, only the impervious area associated with the high-use site is subject to oil control treatment, but the flow from that area must be separated; otherwise the treatment controls must be sized for the entire area.

***Phosphorus  
Treatment  
Requirements***

Phosphorus treatment is required only where federal, state, or local government has determined that a water body is sensitive to phosphorus and that a reduction in phosphorus from new development and redevelopment is necessary to achieve the water quality standard to protect its beneficial uses. Where it is deemed necessary, a strategy will be adopted to achieve the reduction in phosphorus. The strategy will be based on knowledge of the sources of phosphorus and the effectiveness of the proposed methods of removing phosphorus. Contact the local jurisdiction to determine if phosphorus treatment is required for your project.

***Treatment  
Facility Sizing***

Each treatment BMP is sized based on a water quality design volume, or a water quality design flow rate. Agencies and local jurisdictions should adopt criteria to provide for consistent sizing of treatment facilities. The computational methods for predicting runoff volumes and flow rates for the proposed development condition are included in Chapter 4 of this Manual. Specific design criteria for treatment facilities also may be identified in Chapter 5 in order to achieve the performance goal of a particular BMP. Public road projects may be designed using BMPs in the 2004 (and future approved editions of the) Washington State Department of Transportation *Highway Runoff Manual* if the Core Elements for New Development and Redevelopment in this manual are met.

Water quality design volume: Volume-based treatment BMPs are sized the same whether located upstream or downstream from detention facilities. Each agency or local government should specify which of the following methods will be used to determine treatment volumes in their jurisdiction. If the jurisdiction has not identified a preferred method, the default method shall be Method 1 in Regions 1 and 4; and Method 2 in Regions 2 and 3.

*Method 1:* The volume of runoff predicted for the proposed development condition from the regional storm with a 6-month return frequency. An alternative to this method is the modified Type IA storm described in Chapter 4.2; this alternative method is intended for use on small projects where the designer's software does not accept storms longer than 24 hours.

*Method 2:* The volume of runoff predicted for the proposed development condition from the SCS Type IA 24-hour storm with a 6-month return frequency.

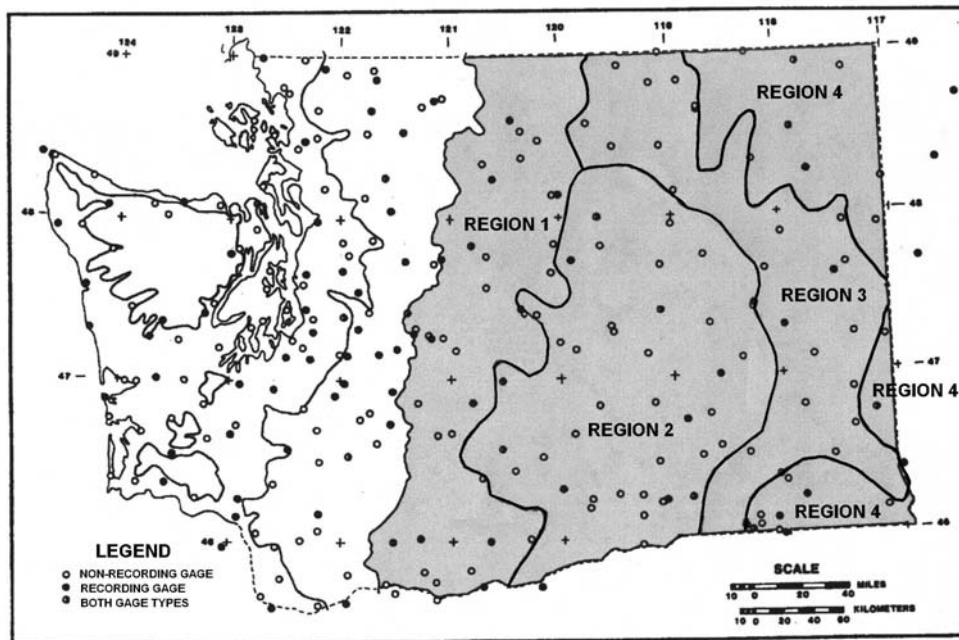
*Method 3:* In Regions 2 and 3, volume-based facilities may be sized for 0.5 inch predicted runoff produced for the proposed development condition from all impervious surface areas that contribute flow to the treatment facility. (This method is modified for design of BMP T5.30 Bio-infiltration swale in Chapter 5.) See Figure 2.1 for a map of the approximate delineation of the four climatic regions in eastern Washington; a more detailed map is provided in Chapter 4 (see figure 4.3.1).

*Method 4:* The volume of runoff predicted for the proposed development condition from the SCS Type II storm with a 6-month return frequency.

*Method 5:* Another sizing approach and criteria based on peer-reviewed methods and supported by local data that meet the objective of treating at least 90% of the annual volume of runoff from the site.

*Snowmelt Considerations:* Snowmelt should be considered in determining the water quality design volume. This is especially important in Regions 1 and 4 and also applies to other areas of eastern Washington. Check for local requirements. A snowmelt factor based on the water content of the average daily depth of snow (or based on some other appropriate measurement) should be added to the depth of precipitation for calculating runoff treatment volume; or another method described in Chapter 4.2.7 may be used.

Water quality design flow rate: Flow-rate-based treatment BMPs are sized differently depending on whether they are located upstream or downstream from detention facilities, if detention is required. Each agency or local government should specify which of the following methods will be used in their jurisdiction to size facilities preceding detention ponds. If the jurisdiction has not identified a preferred method, the default method shall be Method 1 in Regions 1 and 4; and Method 2 in Regions 2 and 3. For large facilities receiving inflow from multiple sources, the flow rate generated by the regional or Type IA storm should also be checked.



**Figure 2.1 – Approximate delineation of climatic regions in eastern Washington.  
A more detailed map is provided in Figure 4.3.1.**

*For runoff treatment facilities preceding detention facilities or when detention facilities are not required:*

*Method 1:* The runoff flow rate predicted for the proposed development condition from the short-duration storm with a 6-month return frequency. (Time intervals are specified in the BMP designs.)

*Method 2:* The runoff flow rate predicted for the proposed development condition from the SCS Type II 24-hour storm with a 6-month return frequency. (Time intervals are specified in the BMP designs.)

*Method 3:* The runoff flow rate for the proposed development condition calculated by the Rational Method using the 2-year Mean Recurrence Interval (see Chapter 4.7). This method may only be used to design facilities based on instantaneous peak flow rates.

*For runoff treatment facilities sited downstream of detention facilities:*  
The full 2-year release rate of the detention facility.

***Bypass  
Requirements***

A bypass must be provided for all treatment BMPs unless the facility is able to convey the 25-year short-duration storm without damaging the BMP or dislodging pollutants from within it. Extreme runoff events may produce high flow velocities through BMPs that can damage and or

dislodge pollutants from within the facility. The designer must check the maximum allowable velocity (typically less than 2 ft/s) or shear stress specified for the BMP and implement a flow bypass as necessary to prevent exceeding these velocities. Bypass is not recommended for wet ponds, constructed wetlands, and similar volume-based treatment facilities. Inlet structures for these facilities should be designed to dampen velocities; the pond dimensions will further dissipate the energy. In these facilities, larger storms will be retained for a shorter detention time than the shorter storms for which the ponds are designed. See Chapter 5.3.1 for bypass design information.

***Use of Existing  
Wetlands to  
Provide Runoff  
Treatment***

Stormwater treatment facilities are not allowed within a wetland or its natural vegetated buffer except for:

- Necessary conveyance systems approved by the local government; or
- As allowed in a wetland mitigation plan; or
- When the requirements below are met:

A wetland can be considered for use in stormwater treatment if:

The wetland meets the criteria for “Hydrologic Modification of a Wetland” in Core Element #6 Flow Control;

and either:

It is a Category 4 wetland according to the *Eastern Washington Wetland Rating System* (see the final rating form provided on Ecology’s website);

or:

It is a Category 3 wetland according to the *Eastern Washington Wetland Rating System* and the wetland has been previously disturbed by human activity, as evidenced by agriculture, fill areas, ditches *or* the wetland is dominated by introduced or invasive weedy plant species as identified in the rating analysis.

Basic treatment is required prior to discharge to Category 3 wetlands; a Category 3 wetland that meets the above requirements may be used to meet metals treatment requirements. Oil treatment required for all discharges to wetlands from high use sites (see definition).

Caution: Wetlands may accumulate the salts in anti-icing and deicing chemicals, so use of such chemicals should be limited in the areas discharging to the wetland (see Core Element #3 Source Control).

Mitigation is usually required for the impact of using a wetland as a stormwater treatment facility. Appropriate measures include expansion, enhancement and/or preservation of a buffer around the wetland.

***Additional  
Requirements***

Additional treatment or siting requirements may be imposed by federal, state or local governments to achieve specific water quality protection or restoration goals. Check with the local jurisdiction for additional requirements.

### **Supplemental Guidelines**

See Chapters 4 and 5 of this Manual for detailed guidance on selection, design, construction, operation, and maintenance of treatment facilities. The water quality design volumes and flow rates are intended to size facilities to capture and effectively treat at least 90% of the annual runoff volume in eastern Washington. Facilities designed in this manner should also capture and treat nearly all of the “first flush” events.

Additional exemptions from metals treatment requirements for rural roads or small isolated commercial projects located outside Urban Growth Area boundaries may be considered on a case-by-case basis after consideration of the ability of basic treatment to protect water quality in the receiving water. Some receiving waters will have sufficient capacity to dilute the metals concentration from the cumulative stormwater discharges so water quality standards are not violated; other water bodies will not have sufficient mixing and dilution capacity. In making a determination, the local jurisdiction or other agency reviewing the project needs to consider: the average lowest monthly flow in the water body; and the existing and expected metals contributions from the surrounding area based on the zoning and probable future land use. The analysis must determine whether a water quality violation is likely to occur when a thunderstorm following an extended period of dry weather contributes polluted runoff from future build out areas to the water body during low flow conditions.

If the runoff generated from a project site by the water quality design storm discharges to a conveyance system that does not reach a surface water body or UIC facility, then basic treatment is not required. The analysis must consider all of the water flowing to the conveyance system, not just the water from the project site.

Project designers are encouraged to consider site grading, conveyance, and other design specifications that separate NPGIS from PGIS runoff to avoid treating all of the runoff from the site. Designers are also encouraged to keep PGIS runoff from portions of the site that require oil or metals treatment separate from PGIS areas that need only basic treatment where it might be possible to avoid treating all of the runoff from the site to the higher standard.

### **Responsibilities of Local Jurisdictions**

During plan review, local jurisdictions should evaluate whether the objectives of this Core Element have been met. Staff should be aware of any current water cleanup plans (including TMDLs), sole-source aquifer protection measures, well-head protection areas or other requirements to protect or restore water quality.

Each local government should identify a preferred method for calculating (1) runoff volumes and (2) flow rates to ensure consistent sizing of treatment BMPs in their jurisdiction and to facilitate plan review. Local

jurisdictions may choose to accept road projects designed per another approved equivalent manual; projects using BMPs in the 2004 Washington State Department of Transportation *Highway Runoff Manual* should still apply the Core Elements for New Development and Redevelopment in this manual. Proponents of unique or complex projects may wish to use other methodologies, and staff should work with those designers to ensure that the objectives of this Core Element are met.

Local jurisdictions are encouraged to assist in development and testing of new treatment methodologies. See Chapter 5.12 for more information.

## **2.2.6 Core Element #6 Flow Control**

### **Objective**

The purpose of flow control is to mitigate to the maximum extent practicable the impacts of increased storm runoff volumes and flow rates on streams in eastern Washington. The intent of this Core Element is to prevent cumulative future impacts from urban runoff; the impacts of prior development and (or) flow modifications in eastern Washington are not addressed through this Manual.

Wherever possible, infiltration is the preferred method of flow control for urban runoff. Some stream habitat problems in eastern Washington result from reduced instream flows during the hot summer months. Flow control using detention basins will not address this issue and may exacerbate it; but the cumulative effect of infiltrating urban runoff should have a neutral or possibly beneficial effect.

This Core Element is targeted to smaller water bodies, especially first to third order streams or water bodies with contributing watershed areas of less than 100 square miles. These streams are more susceptible to changes in runoff patterns caused by development.

This Core Element is also targeted to wetlands. Discharges to wetlands should maintain the hydrology (depth and duration of inundation) of the existing condition in order to protect the unique vegetation and other characteristics necessary to support existing and designated uses.

Design specifications for conveyance and flood prevention are determined by local jurisdictions. This Core Element does not address those issues.

### **Exemptions**

Flow control is not required for all discharges to surface waters in eastern Washington because flow control is not always needed to protect stream morphology. The exemptions listed below are provided to assist local jurisdictions in determining which projects should be subjected to this Core Element. Any project may be subject to local requirements for flow

control to prevent flooding. All projects are encouraged to infiltrate storm runoff on site to the greatest extent possible.

In consideration of other environmental issues, a local jurisdiction may wish to require flow control for one or more of the types of projects or water bodies listed below. Conversely, following analysis of a particular water body and/or its watershed, a local jurisdiction may determine that flow control is not necessary for certain discharges or to protect certain water bodies, or decide to provide a regional stormwater facility instead of requiring site-by-site flow control facilities. See additional information in the supplemental guidelines.

The following projects and discharges are exempt from flow control requirements to protect stream morphology. Runoff treatment may still be required per Core Element #5. Local jurisdictions may override any exemptions.

1. Any project able to disperse, without discharge to surface waters, the total 25-year runoff volume for the proposed development condition on property that is under the functional control of the project proponent. See the guidelines for dispersion in Chapter 6.5, particularly BMP F6.42.
2. A road project able to disperse, without discharge to surface waters, the total 25-year runoff volume for the proposed development condition on land for which this use has been specifically authorized by the controlling entity. See the guidelines for dispersion in Chapter 6.5 and the 2004 (and future revisions of) Washington State Department of Transportation *Highway Runoff Manual*.
3. A project constructing less than 10,000 square feet of total impervious surfaces. Local jurisdictions may establish a different impervious surface area threshold (see Core Element #8 Local Requirements).
4. A project discharging to stream reaches consisting primarily of irrigation return flows and not providing habitat for fish spawning and rearing. Projects should match the pre-developed or existing condition 2-year and 25-year peak runoff rates for these discharges. The local irrigation district may impose other requirements.
5. A project discharging directly to:
  - Any of the rivers or lakes on the list of exempt surface waters below; or
  - Reservoirs on the Columbia, Snake, Pend Oreille, or Spokane rivers; or
  - Other reservoirs with outlet controls that are operated for varying discharges to the downstream reaches as for hydropower, flood control, irrigation, or drinking water supplies. Uncontrolled, flow-through impoundments are not exempt.

Projects may also discharge to these waters through a publicly owned conveyance system with sufficient capacity; permission must be granted by the owner/operator of the conveyance system.

In order to be exempted, the discharge must meet all of the following requirements:

- a. The project area must be drained by a conveyance system that is comprised entirely of manmade conveyance elements (e.g., pipes, ditches, outfall protection); and
- b. The conveyance system must extend to the ordinary high water line of the receiving water, or (in order to avoid construction activities in sensitive areas) flows are properly dispersed before reaching the buffer zone of the sensitive or critical area; and
- c. Any erodible elements of the conveyance system for the project area must be adequately stabilized to prevent erosion; and
- d. Surface water from the project area must not be diverted from or increased to an existing wetland, stream, or near-shore habitat sufficient to cause a significant adverse impact. Adverse impacts are expected from uncontrolled flows causing a significant increase or decrease in the 1.5- to 2-year peak flow rate.

Exempt surface waters:

Asotin Creek downstream of confluence with George Creek  
Banks Lake  
Bumping River downstream of confluence with American River  
Lake Chelan  
Cle Elum River downstream of Cle Elum Lake  
Columbia River  
Colville River downstream of confluence with Chewelah Creek  
Grande Ronde River  
Kettle River downstream of confluence with Boulder Creek  
Klickitat River downstream of confluence with West Fork  
Latah Creek (formerly called Hangman Creek) downstream of  
confluence with Rock Creek (in Spokane County)  
Little Spokane River downstream of confluence with Deadman Creek  
Lower Crab Creek  
Methow River downstream of confluence with Early Winters Creek  
Moses Lake  
Naches River downstream of confluence with Bumping River  
Okanogan River  
Palouse River downstream of confluence with South Fork  
Palouse River  
Pend Oreille River  
Potholes Reservoir  
Rock Creek (in Whitman County) downstream of confluence with  
Cottonwood Creek  
Similkameen River

Snake River

Spokane River

Teanaway River downstream of confluence of north and west forks

Tieton River downstream of Rimrock Lake

Toppenish Creek downstream of confluence with Wanity Slough

Touchet River downstream of confluence with Patit Creek

Tucannon River downstream of confluence with Pataha Creek

Walla Walla River downstream of confluence with Mill Creek

Wenatchee River downstream of confluence with Icicle Creek

Yakima River downstream of Lake Easton

This list of exempt water bodies is generally comprised of fifth or greater order stream channels (determined from a 1:150,000 scale map) and lakes with watershed areas much greater than 100 square miles. The list is subject to change as more information is gathered. See the Supplemental Guidelines at the end of this section for an alternate definition of a “large” exempt stream.

6. A project discharging to a wetland that has no surface water outlet does not need to meet the flow control requirements to protect stream morphology. Flow control may still be required to protect the wetland (see Core Element 4 Protection of Natural Drainage Systems and Outfalls and also the guidelines for wetlands below).
7. A project located at a site with less than 10” average annual rainfall that discharges to a seasonal stream which is not connected via surface flow to a non-exempt surface water by runoff generated by the 2-year Type IA storm.
8. A project that discharges to a stream which flows only during runoff-producing events. The runoff carried by the stream following the 2-year regional storm in Regions 1 and 4, or the Type IA storm in Regions 2 and 3, must not discharge via surface flow to a non-exempt surface water. The stream may carry runoff during an average annual snowmelt event but must not have a period of baseflow during a year of normal precipitation.

Any additional exemptions to and overriding of this Core Element are left to the local jurisdiction based on basin planning and studies (see Supplemental Guidelines). These plans and studies should consider: the total impervious area in the watershed under likely future development scenarios; other possible development impacts or contributions toward increasing future streamflow volumes and changing the stream channel morphology and/or increasing the potential for streambank erosion; other potential cumulative downstream effects; and unique habitat characteristics.

## **Guidelines**

Non-exempt projects shall construct stormwater flow control facilities for any discharge of stormwater directly, or through a conveyance system, into surface water. Discharges to groundwater are exempt from the flow control requirements of this Manual, but may be subject to design specifications or other restrictions established by local jurisdictions. Flow control facilities shall be selected, designed, constructed, operated and maintained according to the criteria in Chapters 4 and 6. The requirements below apply to projects whose stormwater discharges into a non-exempt surface water, either directly or indirectly through a natural or man-made conveyance system. For a list of exempt surface waters, see the Exemptions section above.

In order to prevent localized erosion, energy dissipation at the point of discharge is required for all projects unless site-specific conditions warrant an exception (see also Core Element #4 Preservation of Natural Drainage Systems).

When this Core Element is required, Core Element #7 Operation and Maintenance is also required.

### ***Hydrologic Analysis***

Pre-development or existing and proposed-development condition runoff volumes and flow rates shall be estimated using the methods described in Chapter 4 of this manual or by an alternate method approved by the local jurisdiction. Existing conditions at the site are used for the analysis unless the local jurisdiction has imposed other requirements. The design storm for determining both volumes and flow rates in Regions 1 and 4 is the regional storm (an acceptable alternative for small projects when the designer's software does not accept a storm longer than 24 hours is the modified Type IA storm described in Chapter 4.2); the design storm for Regions 2 and 3 is the Type IA storm. A custom design storm or modeling approach based on historical data or rainfall-runoff studies for a certain watershed may also be applied where adopted by an agency or local government. See Chapter 6 for pond and release structure design information.

### ***Application to Non-Exempt Streams***

To protect stream morphology, projects shall limit the peak rate of runoff to 50% of the pre-developed or existing 2-year peak flow and maintain the pre-developed or existing 25-year peak runoff rate. The entire 2-year runoff volume from the proposed development condition shall be released at no more than 50% of the pre-developed or existing 2-year peak flow rate. The design storm to be used is the regional storm in Regions 1 and 4 or the Type IA storm in Regions 2 and 3. Existing conditions at the site are used for the analysis unless the local jurisdiction has imposed other requirements. A custom design storm or modeling approach based on historical data or rainfall-runoff studies for a certain watershed may also be applied where adopted by an agency or local government. An agency or local jurisdiction also may require detention basins to be designed to

match a different return-interval (e.g. 10-year, 50-year, or 100-year) peak flow rate instead of or in addition to the 25-year peak flow rate. In all cases where the discharge is to non-exempt streams, detention basins must be designed to release no more than 50% of the 2-year peak flow rate for the pre-developed or existing condition.

***Application to  
Wetlands and  
Lakes***

To protect wetland hydrology, if the wetland does not have an outlet to a stream or has a direct outlet to an exempt river or lake, the project shall maintain the pre-developed or existing 2-year and 25-year peak runoff rates for the regional storm in Regions 1 and 4 or the Type IA storm in Regions 2 and 3. If the wetland has an outlet to a non-exempt stream, the project shall meet the flow control design requirement above to protect the stream. Category 3 or 4 wetlands may be excluded from this requirement and used as detention and(or) treatment facilities if the criteria below for “Hydrologic Modification of a Wetland” (and in Core Element #5, for treatment) are met. Discharges to lakes shall maintain the pre-developed or existing 2-year and 25-year peak runoff rates for the regional storm in Regions 1 and 4 or the Type IA storm in Regions 2 and 3. An agency or local jurisdiction also may require detention basins to be designed to match a different return-interval (e.g., 10-year, 50-year, or 100-year) peak flow rate instead of or in addition to the 25-year peak flow rate for discharges to either lakes or wetlands.

***Considerations  
for Very Low  
Flow Rates***

In many cases the 2-year pre-developed or existing condition flow rate is zero cubic feet per second, or the flow rate is so small that it is impracticable to design a pond to release at the prescribed flow rate from an engineered outlet structure. In these cases the total 2-year storm runoff volume from the proposed development condition must be infiltrated (preferred) or stored in a retention pond for evaporation, and the detention pond designed to release the pre-developed 10-year and 25-year flow rates. An agency or local jurisdiction also may require detention basins to be designed to match different return-intervals (e.g., match only the 10-year, or match the 50-year or 100-year peak flow rate instead of or in addition to the 25-year peak flow rate).

***Hydrologic  
Modification  
of a Wetland***

Hydrologic modification of a wetland for the purpose of stormwater management means that the wetland will receive a greater total volume of surface runoff following the proposed development than it receives in the current condition (see Chapter 4 Hydrologic Analysis). Hydrologic modification is not allowed if the wetland is classified as Category 1 or 2 according to the *Eastern Washington Wetland Rating System* (see the final rating form provided on Ecology’s website) unless the project proponent demonstrates that preferred methods of excess stormwater disposal (e.g., infiltration) are not possible at the site and that other options (e.g., evaporation) would result in more damage to the wetland by limiting baseflow.

A wetland can be considered for hydrologic modification if it is a Category 3 or 4 wetland according to the *Eastern Washington Wetland Rating System* and:

- There is good evidence that the natural hydrologic regime of the wetland can be restored by augmenting its water supply with excess stormwater runoff; or the wetland is under imminent threat exclusive of stormwater management and could receive greater protection if acquired for a stormwater management project rather than left in existing ownership;

and:

- The runoff is from the same natural drainage basin; the wetland lies in the natural routing of the runoff; and the site plan allows runoff discharge at the natural location. Exceptions may be made for regional facilities planned by the local jurisdiction, but the wetland should receive water from sites in the same watershed.

Mitigation is usually required for the impact of hydrologic modification to a wetland. Appropriate measures include expansion, enhancement and/or preservation of a buffer around the wetland.

***Applicability to  
UIC Facilities***

This Core Element does not apply to projects using drywells and other UIC rule-authorized subsurface infiltration systems. See Chapter 6 for supplemental guidance on sizing drywells.

**Supplemental Guidelines**

Local jurisdictions may adopt a conservative, restricted set of curve numbers for estimating runoff volumes and flow rates from pre-development or existing conditions. Ecology recommends that local jurisdictions consider applying natural vegetative cover pre-development conditions. Natural vegetative cover has a moderating influence on runoff generation during rain-on-snow events, and changes in cover should be a primary consideration in evaluating the change in runoff volumes caused by development in many areas of eastern Washington.

The local jurisdiction or project proponent may evaluate the substrate of a stream to determine whether the requirement to release the 2-year peak volume for the proposed development condition at 50% of the 2-year peak flow rate for the pre-development or existing can and should be adjusted. The release rate of 50% of the 2-year peak flow rate is a middle ground that should be protective for most streams and was chosen for its ease of application. However, for a highly erodible substrate such as sand or loess the target should be closer to 20% of the 2-year peak flow rate; and for an erosion-resistant substrate such as clay, the target could be closer to 90% of the 2-year peak flow rate. The substrate should be evaluated for a minimum distance of one-half mile downstream of the proposed discharge. The focus of the study should be on evaluating the erodibility of the downstream substrate under the probable build-out conditions to at least the next significant natural inflow, and the results considered

together with studies and findings by Leopold *et. al.* (1964), Williams (1978), Harvey and Watson (1986), Hammer (1972), Bledsoe and Watson (2001), Booth (1997), and Cappuccitti and Page (2000) in making the determination.

In order to reduce potential effects of increased water temperatures during the hot summer months, projects should consider withholding the total runoff volume for the proposed development condition from the 2-year short-duration storm in the detention facility for infiltration (preferred) and(or) evaporation.

To meet the flow control target, optimal placement of multiple small-scale retention/infiltration facilities within a drainage area may require less total storage capacity than a single detention pond at the drainage outlet.

A number of proven and emerging “Low Impact Development” (LID) techniques may be applied at sites in eastern Washington to reduce impervious surface areas and minimize the increase in runoff rates from a project site. Such techniques include use of porous pavement, grassed pavers, and curb cuts to small surface depressions instead of raised planting beds in parking areas. See Ecology’s, the U.S. Environmental Protection Agency’s or the Puget Sound Water Quality Action Team’s websites for additional information about LID approaches and links to demonstration projects and research activities. The Washington State Department of Transportation also included a section on LID techniques for roads in the 2004 *Highway Runoff Manual*.

Local jurisdictions may require detention basins to be designed to match the 10-year peak flow in addition to 50% of the 2-year peak flow and the full 25-year peak flow. The purpose of this design specification is to improve the function of the detention basin in matching predeveloped peaks between 50% of the 2-year peak flow and the full 25-year peak flow and possibly reduce the size of the detention facility.

Regulatory agencies and local jurisdictions may exempt additional streams from this Core Element by applying the following definition of a “large” stream (see exemption #5):

- Any river or stream that is fifth order or greater as determined from a 1:24,000 scale map; or
- Any river or stream that is fourth order or greater as determined from a 1:100,000 or larger scale map.

The maps should be standard USGS maps or GIS data sets derived from USGS base maps. The other provisions of exemption #5 must still be applied, and consideration should also be given to other information about the stream bed material and downstream channel conditions.

Local jurisdictions may engage in basin planning, studies, zoning restrictions, etc., that result in watershed- or reach- specific changes to the requirements of this Core Element. These studies may also address the

question of whether low streamflow problems may be aggravated by flow control requirements for certain streams.

Additional exemptions to this Core Element may be granted to projects discharging to surface water where the long-term, projected total man-made impervious surface area in the contributing watershed is less than 5% of the total area, and at least 65% of the natural vegetative cover is retained. This determination must be based on current and probable future zoning requirements and build out conditions as determined through a basin analysis conducted by the local jurisdiction (see below). This analysis could also be done for a road project in a rural area; although dispersion (see Chapter 6.5, particularly BMP F6.42) would be preferable to conveyance of runoff to a non-exempt stream.

Local jurisdictions may also exempt a project discharging to a seasonal stream where downstream analysis has concluded that the stream channel morphology was established by past glacial or catastrophic flooding events and the stream channel is capable of carrying a larger frequent streamflow without incision or widening. The stream must not discharge via surface flow to a non-exempt stream.

***Suggested  
Approach for  
Additional  
Exemptions***

In order for a jurisdiction to exempt other water bodies or reaches from flow control requirements, the local jurisdiction must provide scientific justification for the exemption. (The exemption may apply only to restricted areas within a watershed.) This means the jurisdiction must determine that under probable build-out conditions in the watershed, disregarding this Core Element will not adversely affect the receiving waters. Adverse impacts are expected from uncontrolled flows causing a significant increase in the 1.5- to 2-year recurrence interval peak instream flow rate. Documentation must be provided showing that significant increases in instream flow rates will not take place under the maximum projected development condition for the contributing watershed. The documentation should at least include the following elements:

- Analysis of available historical streamflow data for the water body (for a lake, the outlet stream may be the primary water body of interest for flow control) and hydrologic modeling of the watershed under both undeveloped and projected future build-out conditions.
- Observation of downstream channel conditions, including: assessment of the geomorphic conditions, instream habitat, and resident benthic community.
- Maps or geographic analyses showing:
  - current and probable future zoning (with definitions for density of development in each category);
  - the portion of watershed under the jurisdiction of the petitioner;
  - projected total man-made impervious surface areas; and
  - area of native vegetation preserved under probable future build-out conditions.

- Description of the watershed planning efforts undertaken by the petitioning jurisdiction and cooperative planning efforts undertaken with other agencies and jurisdictions with authority in the watershed.

A local jurisdiction also should consider and utilize the above information in planning and designing a regional flow facility, and in particular for determining the appropriate capacity and operation requirements of the facility.

### **Responsibilities of Local Jurisdictions**

During plan review, local jurisdictions should evaluate whether the objectives of this Core Element have been met. Local jurisdictions should establish design criteria for conveyance systems, flood protection, and drywells and other UIC facilities.

In particular, local governments should determine whether the default design criterion of the 25-year runoff volume for detention/retention flow control facilities is appropriate to meet local flood protection goals and, if it is not, establish a different upper boundary design criterion.

Local governments should consider establishing an impervious area threshold below which projects are not required to provide flow control facilities. The exemption should be based on an evaluation for the local area of the amount of impervious surface area necessary to generate an appreciable change in runoff from the 6-month and 2-year regional or Type IA storm events. Alternatively, a project generating less than 0.1 cfs increase in runoff for the 25-year storm could be exempt.

Local governments should also determine whether the default design criteria for drywells in Chapter 6 are appropriate to meet local goals. In particular, knowledge of local geology and groundwater levels may lead to specific siting and infiltration capacity requirements, or to development of presumptive infiltration rates for certain areas in the local jurisdiction. These criteria and local information should be made readily available to designers.

## **2.2.7 Core Element #7 Operation and Maintenance**

### **Objective**

Inadequate maintenance or improper operation is a common cause of failure for stormwater facilities, including drywells. To ensure that stormwater control facilities are adequately maintained and properly operated, projects are required to plan for and perform appropriate preventive maintenance and performance checks at regular intervals.

### **Guidelines**

Where structural BMPs are required, projects shall operate and maintain the facilities in accordance with an Operation and Maintenance (O&M)

plan that is prepared in accordance with the provisions in Chapters 5 and 6 of this Manual. The O&M plan shall address all proposed stormwater facilities and BMPs, and identify the party (or parties) responsible for maintenance and operation; the O&M plan must also address the long-term funding mechanism that will support proper O&M. At private facilities, a copy of the plan shall be retained onsite or within reasonable access to the site, and shall be transferred with the property to the new owner. For public facilities, a copy of the plan shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection by the local jurisdiction.

The local jurisdiction may develop a generic O&M plan for BMPs that are commonly used in public projects; commercial and residential property developers may also develop generic O&M plans for BMPs that are commonly used in their projects. Checklists of O&M actions and procedures may be helpful to the operators.

***Applicability to  
UIC Facilities***

This Core Element is required for all projects with discharges to drywells and other UIC rule-authorized subsurface infiltration systems that require a two-stage drywell or runoff pre-treatment (see Chapter 5.6).

**Supplemental Guidelines**

The description of each BMP in Chapters 5, 6, and 7 of this Manual includes a section on maintenance. Chapter 6 includes a schedule of maintenance standards for drainage facilities. Local jurisdictions should consider more detailed requirements for maintenance logs, such as a record of where wastes are disposed.

**Responsibilities of Local Jurisdictions**

As part plan review and approval, local jurisdictions should consider requiring a performance bond for operation and maintenance of BMPs at the site (see section 2.3.1 Financial Liability). Staff can enforce proper operation and maintenance requirements during site inspections or in response to complaints about a site or facility.

**2.2.8 Core Element #8  
Local Requirements**

**Objective**

This manual describes the minimum Core Elements for stormwater management at project sites in eastern Washington. Due to the variety in hydrology, climate, topography, soils, and priorities for protection of water resources in some areas of eastern Washington, discretion is provided to local jurisdictions in expanding and implementing stormwater requirements.

**Guidelines**

***Applicability to  
UIC Facilities***

All projects, regardless of size, shall meet additional local requirements for flood control, discharges to wetlands, protection of sensitive areas, basin plans, aquifer protections, special water quality requirements based on Total Maximum Daily Load (TMDL) or Water Cleanup Plan, or for any other purpose. Check with the local jurisdiction for the local requirements that are applicable to your project.

This Core Element is required for all projects with discharges to drywells and other UIC rule-authorized subsurface infiltration systems.

**Responsibilities of Local Jurisdictions**

The following specific local requirements, if identified, should be made readily available to project proponents and designers:

- Simplified Stormwater Site Plans (SSPs) or Construction Stormwater Pollution Prevention Plans (SWPPPs) that may have been developed for specific types of projects;
- Actions required under current water clean-up plans (such as TMDLs) or other measures necessary to protect or restore water quality;
- Sole-source aquifer protection requirements and(or) well-head protection area requirements;
- Preferred methods for calculating runoff volumes and flow rates to ensure consistent sizing of treatment BMPs within the jurisdiction;
- A determination of whether a downstream jurisdiction's requirements may apply when jurisdictions have interconnected storm sewer systems (neighboring jurisdictions should work together to establish consistent design criteria for stormwater facilities since hydrologic conditions are likely to be similar);
- Development and testing of new treatment methodologies that may be underway;
- Information on Low Impact Development (LID) techniques that could reduce the amount of impervious surface area at projects;
- Design criteria for conveyance systems and flood prevention;
- Design criteria for drywells, particularly infiltration capacity requirements and related local geologic information;
- Any alternative impervious area or other threshold below which projects are not required to provide flow control facilities;
- Additional exemptions (or exceptions) to the list of exempt surface waters;
- Detailed operation and maintenance requirements; and
- Any other adjustments to the Core Elements or to the Redevelopment requirements in section 2.1.2.

## **2.3 Optional Guidance**

The following guidance is offered as recommendations to local jurisdictions.

### **2.3.1 Financial Liability**

Performance bonding or other appropriate financial guarantees should be required for all private development projects to ensure construction of drainage facilities in compliance with these standards. The type of financial instrument required is less important than ensuring there are adequate funds available in the event that performance is unsatisfactory or non-compliance occurs.

### **2.3.2 Adjustments**

Adjustments to the Core Elements may be granted prior to permit approval and construction. The drainage manual administrator of the local jurisdiction may grant an adjustment provided that a written finding of fact is prepared, that addresses the following:

- The adjustment provides substantially equivalent environmental protection, and
- The objectives of safety, function, environmental protection and facility maintenance, based upon sound engineering, are met.

### **2.3.3 Thresholds**

Local jurisdictions may decrease the size of regulated projects and increase the number of requirements.